



Statistiek van de extreme neerslag voor de Belgische gemeenten

Maarkedal (NIS 45064)

1. Geschatte neerslaghoeveelheid voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.6 | 10.9 | 13.4 | 15.0 | 16.1 | 17.0 | 17.7 | 18.9 | 19.9 | 21.7 | 23.1 | 26.6 |
| 20 min | 11.0 | 15.8 | 19.4 | 21.6 | 23.2 | 24.5 | 25.6 | 27.3 | 28.7 | 31.3 | 33.3 | 38.3 |
| 30 min | 13.0 | 18.9 | 23.3 | 26.0 | 27.9 | 29.5 | 30.8 | 32.9 | 34.6 | 37.8 | 40.2 | 46.3 |
| 1 u | 16.1 | 22.6 | 27.4 | 30.4 | 32.5 | 34.2 | 35.7 | 38.0 | 39.8 | 43.3 | 45.9 | 52.5 |
| 2 u | 19.3 | 26.7 | 32.1 | 35.4 | 37.8 | 39.7 | 41.3 | 43.9 | 46.0 | 49.9 | 52.8 | 60.1 |
| 3 u | 21.4 | 29.5 | 35.5 | 39.1 | 41.7 | 43.9 | 45.6 | 48.4 | 50.7 | 55.0 | 58.1 | 66.2 |
| 6 u | 25.9 | 34.2 | 40.3 | 44.0 | 46.8 | 48.9 | 50.7 | 53.6 | 55.9 | 60.2 | 63.4 | 71.6 |
| 12 u | 31.6 | 41.5 | 48.9 | 53.3 | 56.5 | 59.1 | 61.2 | 64.6 | 67.4 | 72.5 | 76.3 | 86.0 |
| 1 d | 38.8 | 50.3 | 58.5 | 63.4 | 66.9 | 69.7 | 72.0 | 75.7 | 78.7 | 84.1 | 88.1 | 98.2 |
| 2 d | 49.3 | 63.0 | 72.7 | 78.3 | 82.3 | 85.5 | 88.1 | 92.3 | 95.6 | 101.6 | 106.0 | 116.8 |
| 3 d | 52.5 | 67.1 | 77.2 | 83.1 | 87.3 | 90.6 | 93.3 | 97.5 | 100.9 | 107.0 | 111.4 | 122.3 |
| 4 d | 57.1 | 72.7 | 83.4 | 89.5 | 93.9 | 97.3 | 100.1 | 104.5 | 108.0 | 114.3 | 118.9 | 130.0 |
| 5 d | 64.8 | 81.7 | 93.1 | 99.7 | 104.4 | 108.0 | 111.0 | 115.7 | 119.3 | 126.0 | 130.8 | 142.4 |
| 7 d | 74.6 | 92.9 | 105.3 | 112.3 | 117.2 | 121.0 | 124.2 | 129.1 | 132.9 | 139.9 | 144.8 | 156.8 |
| 10 d | 88.9 | 109.5 | 123.3 | 131.1 | 136.5 | 140.7 | 144.1 | 149.5 | 153.7 | 161.2 | 166.5 | 179.4 |
| 15 d | 107.7 | 131.8 | 147.6 | 156.4 | 162.6 | 167.3 | 171.2 | 177.2 | 181.9 | 190.2 | 196.1 | 210.3 |
| 20 d | 125.4 | 153.5 | 171.8 | 181.9 | 189.0 | 194.4 | 198.8 | 205.6 | 210.9 | 220.3 | 226.9 | 242.7 |
| 25 d | 133.7 | 163.7 | 182.9 | 193.6 | 201.0 | 206.6 | 211.2 | 218.3 | 223.7 | 233.5 | 240.4 | 256.6 |
| 30 d | 156.3 | 188.4 | 208.9 | 220.2 | 228.0 | 234.0 | 238.8 | 246.3 | 252.0 | 262.3 | 269.4 | 286.4 |

2. Geschatte neerslaghoeveelheid en standaardafwijking van deze schatting voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.6 | 10.9 | 13.4 | 15.0 | 16.1 | 17.0 | 17.7 | 18.9 | 19.9 | 21.7 | 23.1 | 26.6 |
| | 0.2 | 0.3 | 0.5 | 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.7 |
| 20 min | 11.0 | 15.8 | 19.4 | 21.6 | 23.2 | 24.5 | 25.6 | 27.3 | 28.7 | 31.3 | 33.3 | 38.3 |
| | 0.3 | 0.5 | 0.8 | 1.0 | 1.2 | 1.3 | 1.5 | 1.7 | 1.9 | 2.3 | 2.7 | 3.6 |
| 30 min | 13.0 | 18.9 | 23.3 | 26.0 | 27.9 | 29.5 | 30.8 | 32.9 | 34.6 | 37.8 | 40.2 | 46.3 |
| | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.3 | 1.4 | 1.6 | 1.8 | 2.2 | 2.4 | 3.2 |
| 1 u | 16.1 | 22.6 | 27.4 | 30.4 | 32.5 | 34.2 | 35.7 | 38.0 | 39.8 | 43.3 | 45.9 | 52.5 |
| | 0.5 | 0.7 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.2 | 2.5 | 3.0 | 3.4 | 4.6 |
| 2 u | 19.3 | 26.7 | 32.1 | 35.4 | 37.8 | 39.7 | 41.3 | 43.9 | 46.0 | 49.9 | 52.8 | 60.1 |
| | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.4 | 3.8 | 5.2 |
| 3 u | 21.4 | 29.5 | 35.5 | 39.1 | 41.7 | 43.9 | 45.6 | 48.4 | 50.7 | 55.0 | 58.1 | 66.2 |
| | 0.7 | 1.0 | 1.3 | 1.6 | 1.8 | 2.0 | 2.1 | 2.4 | 2.7 | 3.2 | 3.6 | 4.8 |
| 6 u | 25.9 | 34.2 | 40.3 | 44.0 | 46.8 | 48.9 | 50.7 | 53.6 | 55.9 | 60.2 | 63.4 | 71.6 |
| | 0.8 | 1.0 | 1.4 | 1.7 | 2.0 | 2.2 | 2.5 | 2.9 | 3.2 | 4.0 | 4.6 | 6.3 |
| 12 u | 31.6 | 41.5 | 48.9 | 53.3 | 56.5 | 59.1 | 61.2 | 64.6 | 67.4 | 72.5 | 76.3 | 86.0 |
| | 1.1 | 1.4 | 1.9 | 2.3 | 2.7 | 3.0 | 3.3 | 3.9 | 4.3 | 5.3 | 6.0 | 8.3 |
| 1 d | 38.8 | 50.3 | 58.5 | 63.4 | 66.9 | 69.7 | 72.0 | 75.7 | 78.7 | 84.1 | 88.1 | 98.2 |
| | 1.2 | 1.4 | 1.7 | 2.0 | 2.2 | 2.3 | 2.5 | 2.8 | 3.0 | 3.5 | 3.9 | 5.0 |
| 2 d | 49.3 | 63.0 | 72.7 | 78.3 | 82.3 | 85.5 | 88.1 | 92.3 | 95.6 | 101.6 | 106.0 | 116.8 |
| | 1.8 | 2.3 | 2.9 | 3.4 | 3.8 | 4.1 | 4.4 | 4.9 | 5.4 | 6.2 | 6.9 | 8.7 |
| 3 d | 52.5 | 67.1 | 77.2 | 83.1 | 87.3 | 90.6 | 93.3 | 97.5 | 100.9 | 107.0 | 111.4 | 122.3 |
| | 2.2 | 2.8 | 3.5 | 4.0 | 4.4 | 4.8 | 5.0 | 5.5 | 6.0 | 6.8 | 7.4 | 9.2 |
| 4 d | 57.1 | 72.7 | 83.4 | 89.5 | 93.9 | 97.3 | 100.1 | 104.5 | 108.0 | 114.3 | 118.9 | 130.0 |
| | 2.5 | 3.1 | 3.7 | 4.1 | 4.4 | 4.7 | 4.9 | 5.3 | 5.7 | 6.3 | 6.9 | 8.3 |
| 5 d | 64.8 | 81.7 | 93.1 | 99.7 | 104.4 | 108.0 | 111.0 | 115.7 | 119.3 | 126.0 | 130.8 | 142.4 |
| | 2.9 | 3.6 | 4.2 | 4.6 | 4.9 | 5.1 | 5.3 | 5.7 | 6.0 | 6.7 | 7.1 | 8.5 |
| 7 d | 74.6 | 92.9 | 105.3 | 112.3 | 117.2 | 121.0 | 124.2 | 129.1 | 132.9 | 139.9 | 144.8 | 156.8 |
| | 3.5 | 4.2 | 4.7 | 5.0 | 5.3 | 5.5 | 5.7 | 6.1 | 6.3 | 6.9 | 7.3 | 8.4 |
| 10 d | 88.9 | 109.5 | 123.3 | 131.1 | 136.5 | 140.7 | 144.1 | 149.5 | 153.7 | 161.2 | 166.5 | 179.4 |
| | 4.4 | 5.4 | 6.1 | 6.6 | 6.9 | 7.2 | 7.4 | 7.8 | 8.1 | 8.8 | 9.2 | 10.5 |
| 15 d | 107.7 | 131.8 | 147.6 | 156.4 | 162.6 | 167.3 | 171.2 | 177.2 | 181.9 | 190.2 | 196.1 | 210.3 |
| | 5.3 | 6.5 | 7.2 | 7.7 | 8.0 | 8.2 | 8.4 | 8.7 | 9.0 | 9.4 | 9.7 | 10.6 |
| 20 d | 125.4 | 153.5 | 171.8 | 181.9 | 189.0 | 194.4 | 198.8 | 205.6 | 210.9 | 220.3 | 226.9 | 242.7 |
| | 6.3 | 7.7 | 8.7 | 9.2 | 9.6 | 9.9 | 10.1 | 10.5 | 10.8 | 11.4 | 11.8 | 13.0 |
| 25 d | 133.7 | 163.7 | 182.9 | 193.6 | 201.0 | 206.6 | 211.2 | 218.3 | 223.7 | 233.5 | 240.4 | 256.6 |
| | 7.1 | 8.7 | 9.9 | 10.6 | 11.1 | 11.6 | 11.9 | 12.5 | 13.0 | 14.0 | 14.7 | 16.5 |
| 30 d | 156.3 | 188.4 | 208.9 | 220.2 | 228.0 | 234.0 | 238.8 | 246.3 | 252.0 | 262.3 | 269.4 | 286.4 |
| | 7.8 | 9.5 | 10.9 | 11.8 | 12.4 | 13.0 | 13.5 | 14.2 | 14.9 | 16.1 | 17.0 | 19.5 |

3. 95%-betrouwbaarheidsinterval van de geschatte neerslaghoeveelheid voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.2 | 10.3 | 12.4 | 13.6 | 14.5 | 15.1 | 15.7 | 16.5 | 17.2 | 18.4 | 19.3 | 21.3 |
| | 8.0 | 11.6 | 14.5 | 16.3 | 17.7 | 18.8 | 19.7 | 21.3 | 22.6 | 25.0 | 26.9 | 31.8 |
| 20 min | 10.3 | 14.7 | 17.9 | 19.7 | 20.9 | 21.9 | 22.7 | 24.0 | 25.0 | 26.8 | 28.0 | 31.1 |
| | 11.7 | 16.9 | 21.0 | 23.5 | 25.5 | 27.1 | 28.4 | 30.6 | 32.4 | 35.9 | 38.5 | 45.4 |
| 30 min | 12.2 | 17.7 | 21.7 | 24.0 | 25.6 | 27.0 | 28.0 | 29.8 | 31.1 | 33.6 | 35.5 | 40.0 |
| | 13.8 | 20.1 | 24.9 | 28.0 | 30.2 | 32.1 | 33.6 | 36.1 | 38.2 | 42.1 | 45.0 | 52.6 |
| 1 u | 15.2 | 21.2 | 25.3 | 27.8 | 29.5 | 30.8 | 31.9 | 33.7 | 35.0 | 37.5 | 39.2 | 43.5 |
| | 17.1 | 24.1 | 29.6 | 33.0 | 35.6 | 37.6 | 39.4 | 42.3 | 44.6 | 49.1 | 52.5 | 61.5 |
| 2 u | 18.2 | 24.9 | 29.7 | 32.4 | 34.3 | 35.8 | 37.1 | 39.0 | 40.5 | 43.3 | 45.2 | 50.0 |
| | 20.4 | 28.4 | 34.5 | 38.4 | 41.3 | 43.6 | 45.6 | 48.8 | 51.4 | 56.5 | 60.3 | 70.3 |
| 3 u | 20.1 | 27.6 | 32.9 | 36.1 | 38.3 | 40.0 | 41.4 | 43.7 | 45.4 | 48.7 | 51.0 | 56.7 |
| | 22.8 | 31.4 | 38.0 | 42.1 | 45.2 | 47.7 | 49.8 | 53.2 | 56.0 | 61.3 | 65.2 | 75.6 |
| 6 u | 24.4 | 32.2 | 37.6 | 40.7 | 42.9 | 44.5 | 45.9 | 48.0 | 49.6 | 52.5 | 54.5 | 59.3 |
| | 27.4 | 36.2 | 43.0 | 47.4 | 50.6 | 53.3 | 55.5 | 59.2 | 62.2 | 68.0 | 72.4 | 83.9 |
| 12 u | 29.5 | 38.8 | 45.2 | 48.7 | 51.2 | 53.1 | 54.7 | 57.1 | 58.9 | 62.2 | 64.5 | 69.8 |
| | 33.7 | 44.3 | 52.6 | 57.8 | 61.8 | 65.0 | 67.7 | 72.2 | 75.8 | 82.8 | 88.2 | 102.1 |
| 1 d | 36.5 | 47.5 | 55.1 | 59.5 | 62.7 | 65.1 | 67.1 | 70.3 | 72.7 | 77.3 | 80.5 | 88.4 |
| | 41.1 | 53.0 | 61.9 | 67.2 | 71.2 | 74.3 | 76.9 | 81.2 | 84.6 | 91.0 | 95.8 | 107.9 |
| 2 d | 45.8 | 58.5 | 66.9 | 71.6 | 74.9 | 77.4 | 79.4 | 82.6 | 85.1 | 89.4 | 92.5 | 99.8 |
| | 52.8 | 67.5 | 78.4 | 85.0 | 89.8 | 93.6 | 96.8 | 102.0 | 106.1 | 113.8 | 119.5 | 133.9 |
| 3 d | 48.2 | 61.5 | 70.3 | 75.2 | 78.7 | 81.3 | 83.4 | 86.7 | 89.2 | 93.7 | 96.9 | 104.3 |
| | 56.8 | 72.7 | 84.1 | 91.0 | 96.0 | 99.9 | 103.1 | 108.4 | 112.5 | 120.3 | 126.0 | 140.3 |
| 4 d | 52.1 | 66.5 | 76.1 | 81.5 | 85.2 | 88.1 | 90.4 | 94.1 | 96.9 | 101.9 | 105.4 | 113.7 |
| | 62.0 | 78.8 | 90.6 | 97.6 | 102.6 | 106.5 | 109.8 | 115.0 | 119.1 | 126.8 | 132.3 | 146.2 |
| 5 d | 59.1 | 74.6 | 85.0 | 90.8 | 94.9 | 98.0 | 100.5 | 104.5 | 107.5 | 113.0 | 116.8 | 125.8 |
| | 70.4 | 88.7 | 101.3 | 108.7 | 113.9 | 118.0 | 121.4 | 126.9 | 131.2 | 139.1 | 144.8 | 159.1 |
| 7 d | 67.8 | 84.8 | 96.0 | 102.4 | 106.8 | 110.2 | 112.9 | 117.2 | 120.5 | 126.4 | 130.5 | 140.3 |
| | 81.4 | 101.1 | 114.5 | 122.2 | 127.6 | 131.9 | 135.4 | 141.0 | 145.3 | 153.3 | 159.1 | 173.3 |
| 10 d | 80.3 | 99.0 | 111.3 | 118.2 | 123.0 | 126.6 | 129.6 | 134.2 | 137.7 | 144.0 | 148.5 | 158.8 |
| | 97.4 | 120.1 | 135.3 | 143.9 | 150.0 | 154.8 | 158.7 | 164.8 | 169.6 | 178.3 | 184.6 | 200.0 |
| 15 d | 97.2 | 119.1 | 133.4 | 141.4 | 147.0 | 151.3 | 154.7 | 160.1 | 164.3 | 171.8 | 177.0 | 189.4 |
| | 118.1 | 144.5 | 161.8 | 171.5 | 178.2 | 183.4 | 187.6 | 194.3 | 199.4 | 208.7 | 215.2 | 231.1 |
| 20 d | 113.0 | 138.4 | 154.8 | 163.9 | 170.2 | 175.1 | 179.0 | 185.0 | 189.7 | 198.0 | 203.7 | 217.3 |
| | 137.8 | 168.7 | 188.8 | 200.0 | 207.8 | 213.7 | 218.6 | 226.2 | 232.1 | 242.7 | 250.2 | 268.2 |
| 25 d | 119.9 | 146.7 | 163.6 | 172.8 | 179.2 | 184.0 | 187.8 | 193.7 | 198.2 | 206.2 | 211.6 | 224.2 |
| | 147.6 | 180.7 | 202.2 | 214.3 | 222.8 | 229.3 | 234.5 | 242.8 | 249.3 | 260.9 | 269.1 | 289.0 |
| 30 d | 141.0 | 169.7 | 187.5 | 197.1 | 203.6 | 208.5 | 212.4 | 218.4 | 222.9 | 230.7 | 236.1 | 248.2 |
| | 171.5 | 207.0 | 230.2 | 243.2 | 252.4 | 259.4 | 265.1 | 274.2 | 281.1 | 293.8 | 302.8 | 324.5 |

4. Schatting van de coëfficiënten van Montana.

Formule van Montana : intensiteit[mm/h] = $a \cdot \text{duur}[\text{min}]^{-b}$ voor verschillende tijdsduren

a_1, b_1 : duur < 25 min

a_2, b_2 : duur tussen 25 min en 6000 min (= 100 h)

a_3, b_3 : duur > 6000 min (= 100 h)

| Terugkeerperiode (jaren) | a_1 | b_1 | a_2 | b_2 | a_3 | b_3 |
|--------------------------|-------|--------|--------|--------|-------|--------|
| 2 | 136.0 | 0.4725 | 298.8 | 0.7172 | 52.2 | 0.5167 |
| 5 | 194.5 | 0.4715 | 463.4 | 0.7411 | 77.9 | 0.5362 |
| 10 | 237.0 | 0.4684 | 595.3 | 0.7546 | 101.1 | 0.5507 |
| 15 | 262.4 | 0.4662 | 679.1 | 0.7616 | 116.8 | 0.5593 |
| 20 | 280.7 | 0.4644 | 742.2 | 0.7664 | 129.1 | 0.5654 |
| 25 | 295.2 | 0.4629 | 793.4 | 0.7700 | 139.4 | 0.5701 |
| 30 | 307.3 | 0.4617 | 836.8 | 0.7729 | 148.3 | 0.5740 |
| 40 | 326.6 | 0.4597 | 908.3 | 0.7774 | 163.4 | 0.5802 |
| 50 | 342.0 | 0.4580 | 966.6 | 0.7808 | 176.0 | 0.5850 |
| 75 | 370.6 | 0.4549 | 1078.9 | 0.7869 | 201.3 | 0.5939 |
| 100 | 391.6 | 0.4526 | 1164.2 | 0.7911 | 221.1 | 0.6002 |
| 200 | 444.4 | 0.4468 | 1390.1 | 0.8011 | 276.7 | 0.6155 |

Referenties

Van de Vyver, H. (2012). Spatial regression models for extreme precipitation in Belgium, *Water Resour. Res.*, 48, W09549, doi :10.1029/2011WR011707.

Van de Vyver, H. (2013). Practical return level mapping for extreme precipitation in Belgium, RMI scientific and technical publication 062, 30 pages.

Disclaimer

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Zo niet, dan zijn de rechtbanken van het arrondissement Brussel bevoegd.